

**IN THE CLAIMS:**

Please cancel claims 27-30 without prejudice, and amend the claims as follows:

1-5. (Canceled)

6. (Currently Amended) A method of forming a high conductance barrier layer, comprising:

depositing a first barrier layer to a thickness between about 50Å and about 250Å over the a surface using chemical vapor deposition;

depositing a second barrier layer to a thickness between about 50Å and about 250Å over the first barrier layer using physical vapor deposition, wherein the second barrier layer comprises a material selected from the group consisting of tantalum, and tantalum nitride, and combinations thereof; and, wherein the first barrier layer and the second barrier layer form a high conductance barrier layer having a resistivity of less than about 160 µΩ-cm.

7. (Original) The method of claim 6, wherein depositing a second barrier comprises depositing the second barrier layer utilizing high density plasma physical vapor deposition.

8. (Original) The method of claim 7, wherein the second barrier layer is deposited at a substrate temperature between about 350°C and about 600°C.

9. (Currently Amended) The method of claim 7, wherein the second barrier layer is deposited at a processing pressure between about 20mTorr 20 mTorr and about 100 mTorr.

10. (Currently Amended) The method of claim 7, wherein the second barrier layer is deposited at a substrate temperature between about 350°C and about 600°C and at a processing pressure between about ~~20mTorr~~ 20 mTorr and about 100 mTorr.

11. (Previously Presented) A method of preparing a surface for electrochemical deposition, comprising:

forming a high conductance barrier layer having a resistivity of less than about 160  $\mu\Omega\text{-cm}$  on the surface by forming a first barrier layer over the surface using chemical vapor deposition and by forming a second barrier layer over the first barrier layer using physical vapor deposition; and

depositing a copper seed layer over the high conductance barrier layer utilizing high density plasma physical vapor deposition.

12. (Original) The method of claim 11, wherein the seed layer is deposited to a bottom film thickness between about 250 $\text{\AA}$  and about 1,500 $\text{\AA}$ .

13. (Original) The method of claim 12, wherein the seed layer is deposited to a sidewall film thickness less than about 250 $\text{\AA}$ .

14. (Canceled)

15. (Currently Amended) The method of claim 11, wherein the high conductance barrier layer comprises a material selected from the group consisting of tungsten, tungsten nitride, titanium, and titanium nitride, and combinations thereof.

16. (Currently Amended) The method of claim 11, wherein the high conductance barrier layer comprises a multi-layered stack of one or more materials selected from the group consisting of tungsten, tungsten nitride, titanium, and titanium nitride, and combinations thereof.

17. (Currently Amended) The method of claim 11, wherein forming a ~~high conductance~~ second barrier layer comprises:

depositing a layer comprising tantalum; and  
annealing the layer at a temperature between about 350°C and about 600°C for  
between about 30 seconds and about 30 minutes.

18. (Original) The method of claim 17, wherein annealing the layer comprises  
annealing the layer at a temperature between about 450°C and about 500°C.

19. (Original) The method of claim 11, wherein forming a high conductance  
barrier layer comprises depositing a layer comprising tantalum at a deposition  
temperature between about 350°C and about 600°C.

20. (Original) The method of claim 11, wherein forming a high conductance  
barrier layer comprises depositing a layer comprising tantalum utilizing high density  
plasma physical vapor deposition.

21. (Original) The method of claim 20, wherein the layer is deposited at a  
substrate temperature between about 350°C and about 600°C.

22. (Currently Amended) The method of claim 20, wherein the layer is  
deposited at a processing pressure between about ~~20mTorr~~ 20 mTorr and about 100  
mTorr.

23. (Currently Amended) The method of claim 20, wherein the layer is  
deposited at a substrate temperature between about 350°C and about 600°C and at a  
processing pressure between about ~~20mTorr~~ 20 mTorr and about 100 mTorr.

24. (Canceled)

25. (Currently Amended) The method of claim 24 11, wherein the first barrier layer comprises a material selected from the group consisting of titanium nitride, tungsten, and tungsten nitride, and combinations thereof.

26. (Currently Amended) The method of claim 11, wherein the second barrier layer comprises a material selected from the group consisting of tantalum, and tantalum nitride, and combinations thereof.

27-30. (Canceled)